WHAT IS THE IMPACT OF THE CRUDE OIL PRICE INDEX ON THE PERFORMANCE OF OIL AND GAS FIRMS?

By

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Abstract:

This paper empirically investigates the impact of fluctuations of crude oil prices on the financial performance of the 200 largest oil and gas companies which are listed on the US Stock Exchange for the period ranging from 1990-2008. The empirical results provide evidence that an increase in crude oil price positively influences the performance of oil and gas firms. Results from the panel data regression analysis show a statistically significant relationship (at 1% level) between the oil and gas index, return on equity (ROE), the return on asset (ROA) earning before interest, tax, depreciation and amortization (EBITDATA), and net-income (NI).

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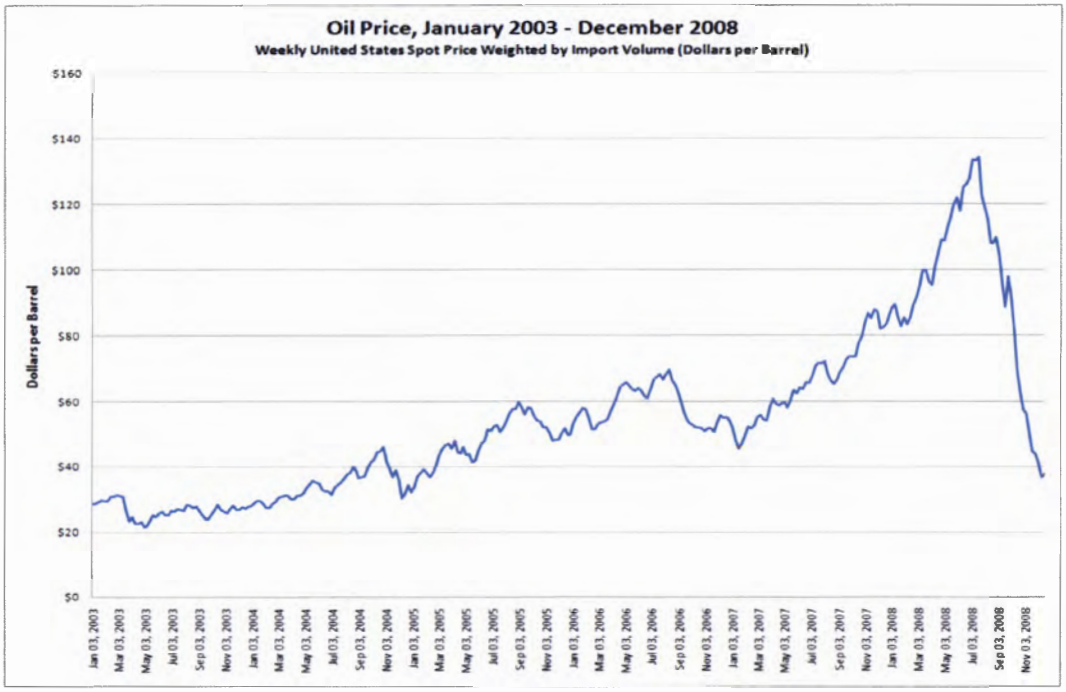
SECTION I

I. INTRODUCTION AND BACKGROUND:

In 2008, crude oil prices increased in a dramatic way and peaked to unprecedented levels ($147 per barrel in July); meanwhile, world oil consumption increased from 75 million barrels per day in 2000 to 87 million barrels per day in 2008, according to the US Department of Energy (refer to chart of page 2). Most of the high demand for oil was generated from Brazil, India, Russia, and China (BRIC) countries, due to their strong economic growth. As a result of this increased demand for oil and the scarcity of oil resources, profits and stock prices for a number of oil and gas companies rose noticeably as the energy stock prices increased. However, the relationship between crude oil price fluctuations and the return on profit for oil companies is still controversial and debatable.

Several studies have examined and tested the impact of fluctuations of crude oil prices on the equity returns at country, industry, and individual company levels (Chen et al. 1986; Al-Mudhaf and Goodwin, 1993; Jones and Kaul, 1996: Faffand Brailsford, 1999; Hammoudeh et al., 2004; Hammoudeh and Li, 2005; Boyerand, Filion, 2007; Nandha and Hammoudeh. 2007), yet, none of these studies has directly examined the relationship between crude oil prices and the financial performance of oil and gas firms.

Figure 1



This paper analyzes the impact of crude oil price index on the financial performance of 200 largest oil and gas companies listed on the US stock exchange market between the period of 1990 and 2008. The U.S. oil industry includes companies engaged in various phases of oil production and processing, operating domestically and internationally. These companies are grouped into five categories based on the classification of the S&P oil industry sector stock indices including; oil exploration and production, oil and gas refining & marketing, oil-domestic integrated, oil-international integrated, and oil composite.

The sample of companies examined includes multinational oil and gas companies, which are traded publicly on US Stock Exchange. As a requirement, these firms must publicly disclose all their performance measures between 1990 and 2008. Panel data regression analysis is the analytical tool employed to facilitate in the analysis and understanding of the underlying relationship between crude oil prices and the financial performance of the oil and gas firms. The performance indicators used in this study are return on equity **(ROE),** return on assets **(ROA),** earnings before interest, tax, depreciation and amortization **(EBITDA),** and net income **(NI).** The total observations for each performance indicator varies between a minimum of 2151 and a maximum of 2494 observations, as shown in the methodology section in table B. This analytical work is based on the hypothesis that: an increase in crude oil price positively influences the financial performance of oil and gas firms.

The outcome of this paper should aid in understanding the relationship between crude oil prices and the financial performance of oil and gas companies that trade on the US Stock Exchange, and are engaged in different activities, especially exploring activities in the petroleum industry. Therefore, the remainder of this paper is structured as follows: Section II reviews existing literature, Section III describes the hypothesis and the research question formulated, Section IV describes the methodology used and data collected about the 200 largest oil and gas companies, Section IV analyses the relationship between the performance indicators and crude oil prices using data collected, and Section VI offers a conclusion.

SECTION II

II. LITERATURE REVIEW:

There has been sufficient research and analysis performed about the relationship between the crude oil prices index and the petroleum sector. Chen et al. 1986; Al-Mudhaf and Goodwin, 1993; Jones and Kaul, 1996; Faffand Brailsford, 1999; Hammoudeh et al., 2004; Hammoudeh and Li, 2005; Boyerand Filion, 2007; Nandha and Hammoudeh. 2007 studied and analyzed how oil company stocks reacted to the changes in oil prices. However, none of the theoretically or empirically published research, shows analysis about the relationship between the change in crude oil prices and financial performance of the oil and gas firms listed on the US stock market (i.e existing research has not addressed the topic on a large scale). This research paper therefore, is focused on investigating the direct impact of fluctuations in crude oil prices on the 200 largest oil and gas company financial indicators.

According to the literature review, considerable research has been conducted about how oil prices influence financial markets and stock prices. For example, at the country level, Jones and Kaul (1996) studied the impact of oil prices across Canada, Japan, UK and USA, and concluded that the differences in oil prices depended on different concentrations of resources and industries. In their research, they utilized a standard cash-flow dividend valuation model as an analytical tool. They found that the

response could completely be accounted for by the impact of the oil stocks on real cash flows; however, the results for Japan and the UK were not as strong as it appeared in Canada.

Huang, Masulis, and Stoll (1996) used Vector Auto regression (VAR) model to examine the relationship between daily oil futures returns and daily U.S. stock returns. They found that oil future returns some individual oil company stock returns but had no impact on the broad based market index such as the S&P 500. In addition, Hammoudeh and Li (2005) made a comparison between oil prices, and the return on the stock markets in oil-based countries, and the world capital market as represented by the MSCI World Index. They found a positive association between oil prices and the return on stock market oil- based countries, and a negative association with the MSCI World Index. In addition, they found a negative relationship between the returns of the US transportation industry and oil prices

Sadorsky (2001) analyzed oil price sensitivity of the Canadian oil and gas industry by using the APT model where the Toronto Stock Exchange (TSE) Oil and Gas index is explained by market return, crude oil price, exchange rate and interest rate. He observed that crude oil prices and market returns have a positive effect on industry returns. Furthermore, Sadorsky (2001) also observed that crude oil prices and market return on the firms listed on the US Stock Exchange have a positive effect on stock prices, whereas a depreciation of the Canadian dollar, and an increase of interest rates, have a negative effect on Canadian oil and gas stocks. In addition, he further explained that the influence of factors (macroeconomics, accounting and others) depends on the timeframe,

the measures employed, the database, or simply on the operations of the corporation in particular.

This implies that different industries react to different factors, for example: a sudden increase in commodity prices of crude oil should not only lead to an increase in the market value of the firms producing the commodity, but also lead to a decrease in the value of net buyers. As Sadorsky (2002) reports, the idea that macroeconomic variables can help to explain excess returns in equity and bond markets has recently been extended to commodity futures markets. He also found that the oil and gas firms value are driven by commodity prices.

At the firm level, AI-Mudhaf and Goodwin (1993) used a multi-factor of the arbitrage pricing theory (APT) model to analyze and explain the differences in market and oil price returns in 29 US oil companies in a period surrounding the oil shock of 1973. They found that oil price shocks drove up returns for oil firms. In addition, Rajgopal and Venkatachalam (1999) studied 25 petroleum refining companies and concluded that earnings exhibited a strong correlation with the firms' oil betas (i.e. their sensitivity to changes in oil prices).

Boyer and Filion (2007) employed the APT model to investigate the determinants of stock returns of Canadian oil and gas companies. Their results also reveal a significant relationship between oil price changes and stock returns.

However, other researchers argue that the impact of crude oil prices on equity returns is ambiguous. (Chen et al. (1986) from US, and Hamao (1989) from Japan). Besides the relation between the oil risk and equity return, some studies focus on the question whether oil price sensitivity can be seen as an explanatory factor in asset pricing. According to the semi-strong form of market efficiency, investors should not be able to trade profitably on the basis of publicly available information. Since the oil price is publicly available for every investor, it suggests that investors can not earn an extra return from bearing oil price risk.

Accordingly, Hammoudeh et al. (2004) investigated the dynamic relationship among five S&P oil sector index and five different oil prices for the US oil markets. The results show that the West Texas Intermediate (WTI) spot oil prices and New York Mercantile Exchange (NYMEX) futures prices explain the stock price movement of oil-related companies.

Using multivariate co-integration techniques and a vector error-correction model, Lanza et al. (2005) examined the long-run financial determinants of the stock prices of six major oil companies and found a significant oil risk premium. However, this contradicts what other researchers have argued. For example, Chen et al. (1986) examined the impact of an index of oil price changes on asset pricing and found no overall effect. Given this contrasting evidence, it is worthwhile to have a closer look at these prevailing issues. This will be achieved by using more recent data for the US and by using a modern financial approach.

Another study that examined the American oil and gas companies brings to light two important details. Firstly, using the Johansen (1988) co-integration test, Aleisa et al. (2003) shows that price fluctuations of West Texas Intermediate (WTI) barrel 1-month to 4-month futures explain share price movements of firms operating in exploration, refinery and marketing of oil. In fact, they note that the degree of co-integration varies between crude oil prices and the firm type. Firms included in the S&P Oil Composite Index, the S&P Oil Domestic Integrated Index and the S&P Oil International Integrated Index have a stronger link to crude oil prices than firms included in the S&P Oil and Gas Exploration Index or the S&P Oil and Gas Refining and Marketing Index.

This paper specifically examines the impact of the fluctuations of crude oil prices on the oil firms' financial indicators including **ROE, ROA, NITA,** and **EBITDATA**, in terms of how significant they are and whether there is a positive or negative relationship.

SECTION III

III. HYPOTHESIS AND RESEARCH QUESTION:

For purposes of this paper, crude oil price is assumed to have a major influence on the performance of oil and gas firms. As stated in the literature review, the relationship between crude oil prices and the performance of the oil and gas companies has not been clearly and conclusively researched. Consequently, an in-depth research will be carried out to analyze this relationship and will be based on the following hypothesis:

Hypothesis:

An increase in crude oil price will positively influence the performance of oil and gas firms

Confirmation or rejection of the above hypotheses will be based on answering the following question:

What is the impact of the crude oil price index on the performance of Oil and Gas firms?

If there is conclusive evidence showing a positive relationship between increase in crude oil prices and the financial performance of oil and gas firms, then the hypothesis will be accepted.

SECTION IV

IV. METHODOLOGY AND DATA:

This empirical research analyzes historical financial data collected from the financial statements of the 200 largest oil and gas companies listed on the US Stock Exchange between the periods of 1990 to 2008. As a requirement these companies must have production and discovery of oil and gas activity in the time series of the study. In addition to the historical financial data, the crude Oil price from the West Texas Intermediate oil and gas index as shown in the chart below was obtained. To mitigate the impact of the fluctuation of crude oil prices, the average price per year for the time period of examination will be used. In addition, a number of key metrics on current active and publicly traded firms including mean, minimum, and maximum, will be used to analyze the relationship between crude oil prices and performance indicators.

FIGURE 2:

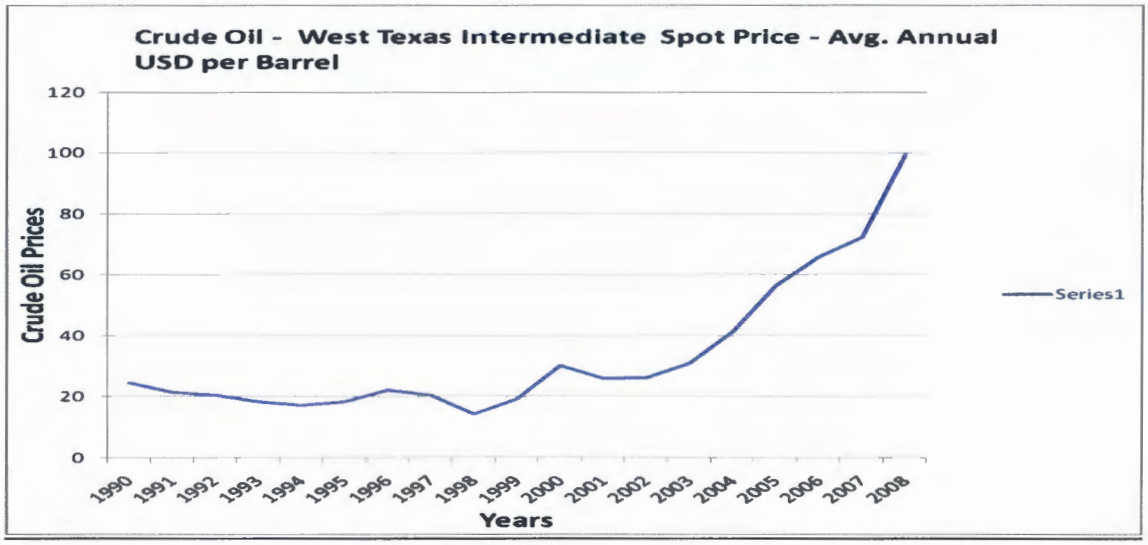


TABLE A:

	Crude Oil - West Texas Intermediate
Year	Spot Price - Avg Annual USD per Barrel
1990	24.53
1991	21.54
1992	20.58
1993	18.43
1994	17.2
1995	18.43
1996	22.12
1997	20.61
1998	14.42
1999	19.34
2000	30.38
2001	25.98
2002	26.18
2003	31.08
2004	41.51
2005	56.64
2006	66.05
2007	72.34
2008	99.67
Source:	**United States Energy Information Administration**

The main financial performance indicators used in this analysis include: return on equity **(ROE)**, return of asset **(ROA),** earning before interest, taxes, depreciation, and amortization **(EBITDATA)** divided by total assets, net income **(NITA)** divided by total assets, gearing **(GEARING),** and total assets **(TA)** measured by the (log) of the market capitalization in US dollars. To diminish the size factor on the performance of the selected companies, **NITA** and **EBIDTA** performance indicators were divided by their total assets respectively.

These performance indicators were selected to be used as variables in the hypothesis because they give clear justification about the performance of firms as crude oil prices fluctuate. In addition, they are commonly used to evaluate the financial performance and the wealth of companies. In order to have a better understanding of the relationship between oil price fluctuations and oil and gas companies' performance, extra variables referred to as dummies (D1, D2, and D3) were added to the analytical model. Each of these dummies symbolizes a big event that occurred and has had enormous impact on the global economy such as the Asian Crisis in 1996, the attack on the world trade center 2001, and the current global financial crisis (2008/2009)

This paper is based on literature review research and secondary resource data. All data was collected from Online Osiris Database, a reliable and consistent data source, and was in the form of financial statements of the selected companies which are publicly available. The historical crude oil price is also available through the oil and index data resource accessible at. *http://tonto.eia.doe.gov/dnav/pet/hist/rwtca.htm*

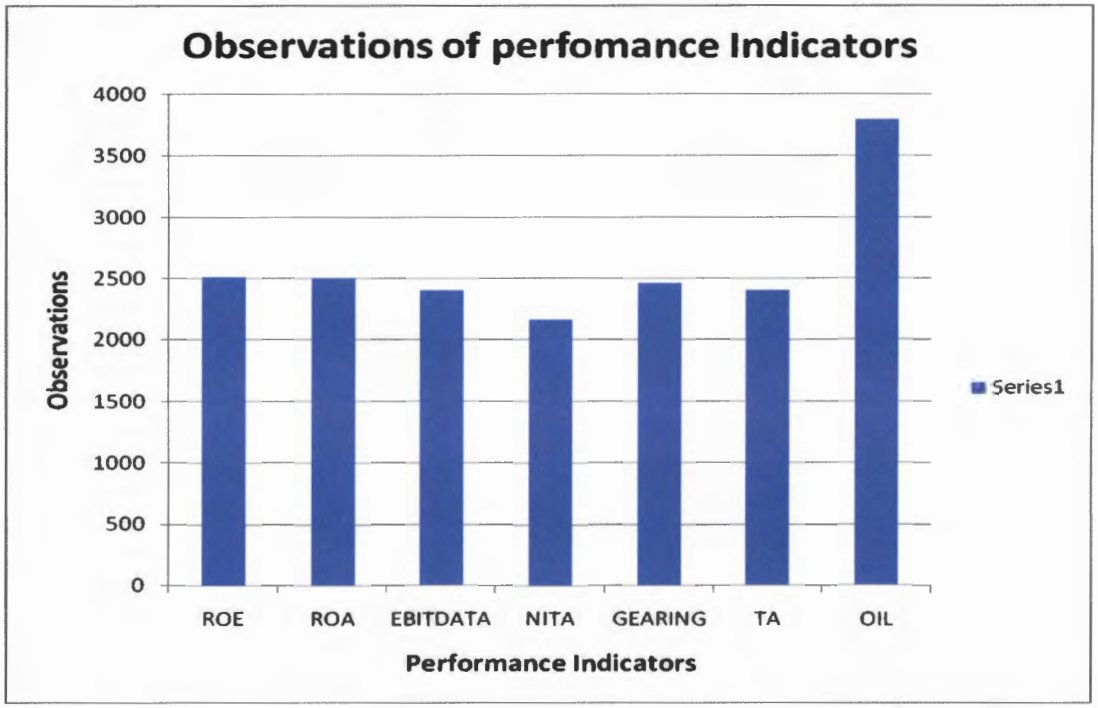
To test this hypothesis, collected financial data was compared to the crude oil price for the same period of time in order to find the relationship between or the impact of the crude oil price index on the performance of oil and gas firms. Note must be taken that some of the performance indicators such as return on equity **(ROE),** and return on assets **(ROA),** are already provided for in the firms' financial statements. However, other performance indicators such as **NITA** and **EBIDATA** have to be calculated so as to serve the purpose of this paper.

The data contain observations for the return on assets, return of equity, earning before interest and taxes, depreciation and amortization, net income, total assets, and gearing. The maximum number of observations should be 200 * 19 = 3800 for each indicator as shown for Oil in the table below. However, due to missing data in the balance sheet, the maximum number of observations for **ROE, ROA, EBITDATA, NITA, GEARING,** and TA could not be calculated. Refer to table below:

TABLE B:

	ROE	ROA	EBITDATA	NITA	GEARING	TA	OIL
Observations	2400	2494	2381	2159	2151	2404	3800

FIGURE 3



Osiris Online Data Resource: Financial information on 44,000 listed and major unlisted/desisted companies worldwide (34,000 are non-US companies). The information includes: standardized and as reported financials (including restated reports), SEC filings, detailed earnings estimates including recommendations, ownership, stock data, news and ratings

Random Effect model is being sued based on the adjusted coefficient (random Vs fixed effects), some total assets is positive using random effects model

In order to analyze the relationship between firm performance and crude oil price, a cross-sectional model was used in which firm performance measured by **ROA, ROE, NITA, EBTIDATA,** is regressed on Crude Oil Price, **GEARING, TA** and the dummies **D1, D2** and **D3** as shown in the regression model below.

(I) $ROE_{it} = a + B_1\ COP_{it} + B_2\ logTA_{it} + B3\ D1_{it} + B_4\ D2_{it} + B_5 D3 + B_6\ GEARING_{it}$

(II) $ROA_{it} = a + B_1\ COP_{it} + B_2\ logTA_{it} + B3\ D1_{it} + B_4\ D2_{it} + B_5 D3 + B_6 GEARING_{it}$

(III) $NITA_{it} = a + B_1\ COP_{it} + B_2\ logTA_{it} + B3\ D1_{it} + B_4\ D2_{it} + B_5 D3 + B_6\ GEARING_{it}$

(IV) $EBITDATA_{it} = a + B_1\ COP_{it} + B_2\ logTA_{it} + B3\ D1_{it} + B_4\ D2_{it} + B_5 D3 + B_6 GEARING_{it}$

From the model above, the dependent variables are return on equity **(ROE)**, net income divided by the total asset for the same year for each firm **(NITA)**, earnings before interest, taxes, depreciation and amortization divided by total asset **(EBITDATA)** and return on assets **(ROA)** for an individual firm. The independent variables include crude oil price **(COP)**, which is calculated as the average price over one year and **GEARING,** which is defined as long term liabilities divided by equities. **D1, D2, and D3** (dummies) symbolize a big event that has occurred and has had enormous impact on the global

economy such as the Asian Crisis in 1996, the attack on the world trade center 2001, and the current global financial crisis (2008/2009)

Variables	Description
ROE:	Return on equity is defined as NI divided by Equity **= NI / Shareholder's Equity**
ROA:	Return on Assets is defined as NI plus interest divided by total assets **= NI/ Total asset**
INTA:	Net Income divided by total Asset is a measure of the profitably of a company over a period of time examination **= Net Income / Total Asset**
EBITDATA:	Earnings before interest, taxes, depreciation and amortization divided by total asset is an indicator of a company's financial performance. **= Revenue- Expenses (excluded Interest, Taxes, Depreciation, and Amortization) / Total Asset**
GEARING:	is defined as long term liabilities divided by shareholder funds. **= (Non Current Liabilities + Loans) / Shareholders Funds * 100**
COP:	Crude Oil - West Texas Intermediate Spot Price - Avg Annual USD per Barrel
TA:	Total assets
D1:	The Asian crisis in 1996: Dummy controlled variable
D2:	The 9/11 attack of the world Trade Center in 2001: Dummy controlled variable
D3:	The financial crisis in 2008; Dummy controlled variable

Key Metrics to be used in the analysis:

In this empirical study, mean, maximum, and minimum metrics were used to analyze the performance indicators including return on assets **(ROA),** Return of equity **(ROE),** Earnings before interest, taxes, depreciation and amortization **(EBITDATA),** and iv) net income **(NITA)**. In addition, the metrics will be used to analyze the control variables **GEARING, OIL**, and **TA.**

SECTION V

V. ANALYSIS

Based on the framework of my hypothesis, which states that the crude oil price will positively influence the performance of oil and gas firms, a strong and positive relationship between the financial performance indicators and the price of crude oil is expected to be found. As indicated in the methodology section, the Mean, Median, Minimum, and the Maximum metrics for both the dependent and independent variables s performance of the oil firms.

Sample: 1990 2008

	ROE	ROA	EBITDATA	NITA	GEARING	TA	OIL
Mean	10.39	4.64	3.85	1.17	76.70	1,262,383.74	34.05
Median	10.89	4.62	2.28	0.57	72.37	56,297.00	24.53
Maximum	52.85	56.93	56.90	48.45	199.65	228,052,000.00	99.67
Minimum	-55.57	-47.25	-34.00	-29.56	-189.68	755,000	14.42
Observations	2,400	2,494	2,381	2,159	2,151	2,404	3,800

Table 1 displays the summary statistics of the depended and independent variables. It shows their Mean, Minimum, and Maximum values as the crude oil prices change.

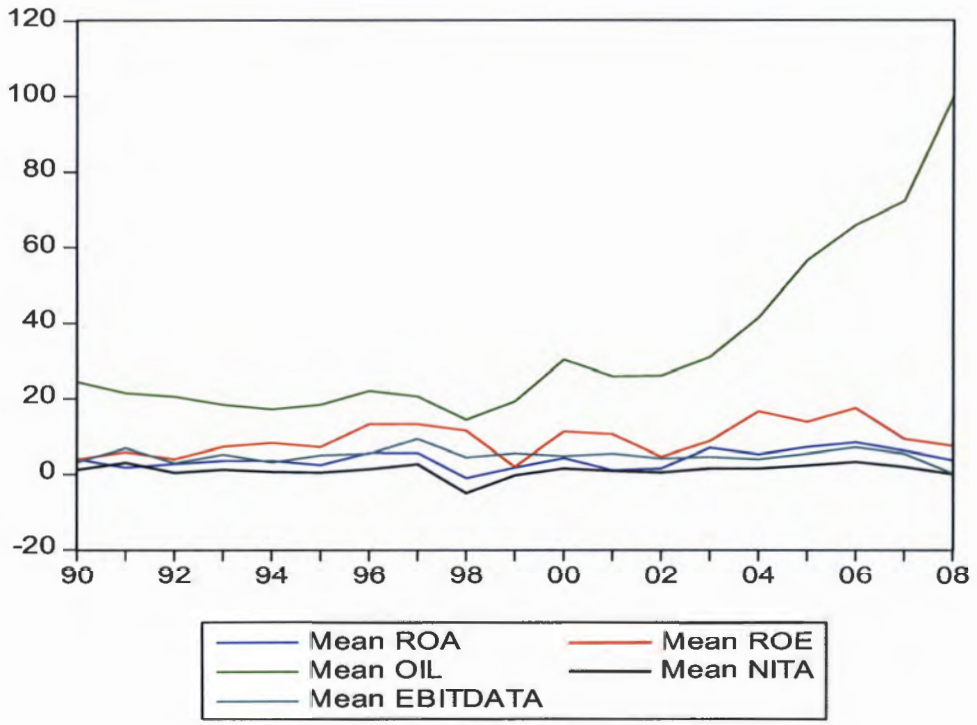
Key Metrics

i. Mean in value of the performance indicators

From table 1 summary statistic, the means of the dependent variables, Return on equity **(ROE)** is 10.39 %, Return on assets **(ROA)** is 4.64%, earnings before interest,

taxes, adding depreciation and amortization divided by total assets **(EBITADTA)** is 3.83% and Net income divided by total assets **(NITA)** is 1.17%. In addition, the mean of the independent variable **GEARING** is 76.70%, and the mean of the crude oil prices is $ 34.05

FIGURE 4: Performance Measures and Oil Price (1990-2008)



ii. Minimum in value of the performance indicators

The second key metric that used in this analysis is the minimum. Accordingly, results indicate that when oil prices dropped to its lowest level at $14 in 1999, the minimum of all performance indicators have a negative sign. This implies that most oil

firms in our sample have negative returns on their assets and/or equity, and preformed negatively at the lowest price in 1999.

Results from table 1 indicate that the lowest return on equity **(ROE),** and the lowest return on assets **(ROA)** among the 200 firms in the sample, equaling to -55.57% and -47.25%, respectively. Also, the mean of the dependent variables both **EBITDATA** and **NITA** are negative when the crude oil prices decreased as shown in (table 1), the minimum values of -34.00% and -29.56% respectively.

iii. Maximum in value of the performance indicators

The maximum value of the performance indicators was recorded when the crude oil prices reached its peak. As the table 1 shows, with the maximum metric, all the values of the performance indicators have a positive sign. The maximum values of the dependent variables return on equity **ROE** amounting to 52.85%, while the largest return on assets **ROA** amounting to 56.93%.The maximum **EBITDATA** value is 56.90% among the tested sample in this study. The highest maximum **NITA** amounting to 48.45%.

The outliers have been removed form the sample to have an accurate results form the regression although they represent a small percentage of the sample. The mean and the median are very close in terms of value, implying that the outliers had no impact on the research, for example, an outliers the maximum value for ROE 889% (outlier) and the minimum is -675% (outlier) whereas the mean is 10.39% and the median is 10.89% (Refer for table 1).

Financial Performance Indicators:

a) -ROE

Table 2 demonstrates the relationship between the dependent variables return on equity ROE and the independent variables crude oil price, total assets, and gearing. In addition, it shows the impact of D1, D2, and D3 on the dependent variable **ROE**. It is evident from the results given by the panel data analysis that there is a significant and positive relationship between the Crude oil price and the **ROE** performance indicator at 1% level. The coefficient of the **GEARING** is negative and significant at the 1% level. The Asian crisis has a positive impact on the **ROE** (significant at the 1% level).the 9/11 attack on the World Trade Center has a positive and significant impact on the ROE at 5% level. Finally, the financial crises have a negative impact on the ROE (significant at the 1% level). The adjusted R- squared is 0.086% and the F- statistic for the regression is 32.05 (significant at the 1% level)

Table 2 Dependent Variable: ROE
Method: Panel EGLS (Cross-section random effects)
Sample: 1990 2008
Periods included: 19
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	p-value
C	0.710	1.938	0.37	0.71
LOG(TA)	0.515***	0.197	2.61	0.01
OIL	0.168***	0.016	10.51	0.00
GEARING	-0.026***	0.007	-3.96	0.00
D1	3.849***	1.279	3.01	0.00
D2	2.216**	1.048	2.11	0.03
D3	-10.410***	1.303	-7.99	0.00
Adjusted R-squared	0.086			
F-statistic	32.05		***	
Prob(F-statistic)	0.00			

*,**,*** significant at the 10,5,1 percent level (two-tailed tested)

D1 = Asian crisis ,
D2 = 9/11
D3 = financial crisis
Gearing = (non-current liabilities + loans)/equity
Size = logarithm of total assets
Oil index = average WTI Crude Oil price

b)- ROA

Results in table 3 show that there is a significant and positive relationship between the crude oil price and the **ROA** at the 1% level. The coefficient of the **GEARING** is negative and insignificant. The Asian crisis has a positive and significant impact at 1% level, and the 9/11 attacks of the trade world center has a positive and significant impact on the dependent variable **ROA** at 10% level. It can also be observed from the table that the current financial crisis has a negative and significant impact on the

ROA 1% level. The adjusted R- squared is 0.07% and the F-statistic for the regression is 20.47 (significant at the 1% level)

Table 3 Dependent Variable: ROA
Method: Panel EGLS (Cross-section random effects)
Sample: 1990 2008
Periods included: 19
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.282	1.488	-1.53	0.13
LOG(TA)	0.226	0.146	1.55	0.12
OIL	0.104***	0.011	9.36	0.00
GEARING	-0.000	0.005	-0.06	0.95
D1	2.295**	1.011	2.27	0.02
D2	1.476*	0.750	1.97	0.05
D3	-7.473***	0.850	-8.79	0.00

Adjusted R-squared	0.07	
F-statistic	20.47	***
Prob(F-statistic)	0.00	

*,**,*** significant at the 10,5,1 percent level (two-tailed tested)

D1 = Asian crisis
D2 = 9/11
D3 = financial crisis
Gearing = (non-current liabilities + loans)/equity
Size = logarithm of total assets
Oil index = average WTI Crude Oil price

c)-EBITDATA

Results from Table 4 shows that there is a significant and positive relationship between the crude oil price and the financial performance **EBITDATA** at the 1% level. The coefficient of the **GEARING** is positive and significant relationship with the **EBITDATA at 5% level**. Both the Asian crisis and the 9/11 attack on the Trade World Center have a positive impact on the EBITDATA at 5%, and1% level accordingly. The current global financial crisis has a negative and significant impact on the EBITDATA at the 1%. The adjusted R- squared is 0.20% and the F-statistic for the regression is 83.75 (significant at 1% level).

Table 4 Dependent Variable: EBITDATA
Method: Panel EGLS (Cross-section random effects)
Sample: 1990 2008
Periods included: 19
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.143***	0.917	20.87	0.00
LOG(TA)	-1.702***	0.094	-18.18	0.00
OIL	0.081***	0.007	12.06	0.00
GEARING	0.005**	0.003	2.04	0.04
D1	0.937*	0.491	1.91	0.06
D2	1.487***	0.398	3.74	0.00
D3	-2.080***	0.510	-4.08	0.00

Adjusted R-squared	0.20	
F-statistic	83.75	***
Prob(F-statistic)	0.00	

*,**,*** significant at the 10,5,1 percent level (two-tailed tested)

d)-NITA

Table 5 shows results from the panel data regression to be similar to the results obtained from previous regressions of other performance indicators. It can be observed from Table 5 that the relationship between the independent variable, crude oil price and the dependent variable, **NITA** is positive and significant at 1% level. The coefficient of **GEARING** has no relationship with **NITA**. The Asian crisis has not impact on the deepened variable, **NITA** . The 9/11 attack on the world trade center has no impact on **NITA**. Finally, the current global financial crisis is observed to have a negative and insignificant impact on the NITA at 1% level. The adjusted R- squared is 0.09% and the F-statistic for the regression is 30.0 and significant at the 1% level.

Table 5 **Dependent Variable: NITA**
Method: Panel EGLS (Cross-section random effects)
Sample: 1990 2008
Periods included: 19
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.968***	0.573	10.41	0.00
LOG(TA)	-0.535***	0.057	-9.37	0.00
OIL	0.043***	0.004	9.89	0.00
GEARING	-0.003	0.002	-1.45	0.15
D1	0.554	0.356	1.56	0.12
D2	0.176	0.307	0.57	0.57
D3	-1.963***	0.343	-5.72	0.00

Adjusted R-squared	0.09	
F-statistic	30.00	***
Prob(F-statistic)	0.00	

*,**,*** significant at the 10,5,1 percent level (two-tailed tested)

Table D: Summary of the relationship between the dependent variables and the controlled variables

	ROE	ROA	NITA	EBITDA
LOG (TA)	+***	+ INS	- ***	- ***
OIL	+ ***	+ ***	+ ***	+ ***
GEARING	- ***	- INS	- INS	+ **
D1	+ ***	+ **	+ ***	+ *
D2	+ **	+ *	+ INS	+ ***
D3	- ***	- ***	- ***	+ ***

*, **, *** significant at the 10, 5, 1 percent level (two-tailed tested) **INS**= Insignificat

Table D summary of shows the results from the panel data analysis between the financial performance indicators (dependent variables) and the controlled variables the (independent variables). It shows how they are related to each other positively or a negatively, and how significant or insignificant their relationship is. As for the hypothesis of this study, table C shows a statistically positive andsignificant relationship between crude oil prices (controlled variable) and, return on equity **(ROE),** return on asset **(ROA)** earning before interest, tax, depreciation and amortization **(EBITDATA)**, and net-income **(NI).**

SECTION VI

VI. CONCLUSION:

The global oil and gas industry has experienced rapid increase in demand most especially from developed and fast developing nations including Brazil, Russia, India, and China (BRIC). This resulted into a dramatic increase in the price per barrel of oil to a record $147 in July 2008.

However, upon reviewing existing literature, it became apparent that no research has conclusively examined the relationship between the crude oil prices and the financial performance of the oil and gas companies on a large scale. This paper has focused on examining the impact of crude oil price fluctuations on the financial performance (ROA, ROE, EBTIDATA, and NITA) of the largest 200, capital based, oil and gas companies which were listed on the USA stock market between 1990 and 2008.

Analysis reveals that there is a positive and significant relationship between crude oil price fluctuations and the financial performance indicator. The empirical results provide evidence that an increase in crude oil price positively influences the performance of oil and gas firms. Results from the panel data regression analysis show a statistically significant relationship (at 1% level) between the oil and gas index, return on equity (ROE), the return on asset (ROA) earning before interest, tax, depreciation and amortization (EBITDATA), and net-income (NI).

Therefore, this study shows that there is a significant positive relationship between crude oil prices and the performance of oil and gas companies, and it answers the question, "What is the impact of the crude oil price index on the performance of Oil and Gas firms?" As a result, the hypothesis that an increase in crude oil price will positively influence the performance of oil and gas firms is confirmed and accepted.

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APPENDIX

Company name	Total Asset
EXXON MOBIL CORP	228052000
CHEVRON CORPORATION	161165000
CONOCOPHILLIPS	142868000
VALERO ENERGY CORP	34417000
MARATHON OIL CORPORATION	42686000
SUNOCO INC	11150000
HESS CORPORATION	28589000
ENTERPRISE GP HOLDINGS L.P.	25371346
ENCANA CORPORATION	47247000
PLAINS ALL AMERICAN PIPELI	10032000
TESORO CORPORATION	7433000
MURPHY OIL CORP	11149098
IMPERIAL OIL LIMITED	13910665
SUNCOR ENERGY INC.	26562143
OCCIDENTAL PETROLEUM CORP	41537000
PETRO-CANADA LTD	24805651
ENTERPRISE PRODUCTS PARTNE	17957535
HUSKY ENERGY INC.	21657684
HALLIBURTON CO	14385000
ANADARKO PETROLEUM CORP	48923000
DEVON ENERGY CORP	31908000
TEPPCO PARTNERS LP	5049820
NATIONAL OILWELL VARCO, IN	21478700
APACHE CORP	29186485
WILLIAMS COMPANIES INC	26006000
BAKER HUGHES INC	11861000
KINDER MORGAN ENERGY PARTN	17885800
CHESAPEAKE ENERGY CORP	38444000
CANADIAN NATURAL RESOURCES	34827699
SMITH INTERNATIONAL INC	10816224
WESTERN REFINING, INC.	3076792
SUNOCO LOGISTICS PARTNERS	2308249
ENBRIDGE ENERGY PARTNERS,	8300900
ENERGY TRANSFER PARTNERS,	10627489
ENERGY TRANSFER EQUITY	11069902
GLOBAL PARTNERS LP	889262
TALISMAN ENERGY INC	19822799
ONEOK PARTNERS, L.P.	7254272
XTO ENERGY INC	38254000
TRANSCANADA CORPORATION	32185203
EOG RESOURCES INC	15951226
NEXEN INC	18091622
FRONTIER OIL CORP	2018469
HOLLY CORP	1874225
CAMERON INTERNATIONAL CORP	5902371
BJ SERVICES CO	5321908
EL PASO CORP	23668000

ALON USA ENERGY, INC.	2413433
CVR ENERGY, INC.	1610483
CROSSTEX ENERGY, L.P.	2533266
CROSSTEX ENERGY, INC.	2546743
NUSTAR ENERGY L.P.	4459597
HARVEST ENERGY TRUST	4691660
DELEK US HOLDINGS, INC	1017200
FMC TECHNOLOGIES INC	3586300
ADAMS RESOURCES & ENERGY I	210926
OGE ENERGY CORP	6518500
NOBLE ENERGY, INC.	12384000
ADDAX PETROLEUM CORPORATION	5317000
CANADIAN OIL SANDS TRUST	5661440
PENN WEST ENERGY TRUST	12585334
DYNEGY INC	14213000
DIAMOND OFFSHORE DRILLING	4938762
EXTERRAN HOLDINGS, INC.	6092627
OIL STATES INTERNATIONAL I	2299247
PROVIDENT ENERGY TRUST	2510264
ENSCO INTERNATIONAL INC	5830100
PLAINS EXPLORATION & PRODU	7111915
PIONEER NATURAL RESOURCES	9163178
SOUTHWESTERN ENERGY CO	4760158
PRIDE INTERNATIONAL INC	6065000
NEWFIELD EXPLORATION CO	7305000
ROWAN COMPANIES, INC.	4548892
PATTERSON UTI ENERGY INC	2712817
DRESSER-RAND GROUP INC.	2052200
ATLAS AMERICA, INC.	4825249
HELIX ENERGY SOLUTIONS GRO	5070338
GENESIS ENERGY LP	1178674
TARGA RESOURCES PARTNERS LP	1580906
GAZ METROPOLITAIN AND COMP	3087850
HELMERICH & PAYNE, INC.	3588045
OCEANEERING INTERNATIONAL	1670020
KEY ENERGY SERVICES INC	2016923
CIMAREX ENERGY CO.	4164933
BUCKEYE GP HOLDINGS L.P.	3263097
BUCKEYE PARTNERS L P	3034410
SUPERIOR ENERGY SERVICES I	2491633
EXCO RESOURCES, INC.	4822352
REGENCY ENERGY PARTNERS LP	2458639
COMPLETE PRODUCTION SERVIC	1994877
FLINT ENERGY SERVICES LTD.	1512881
KEYERA FACILITIES INCOME F	1382719
EAGLE ROCK ENERGY PARTNERS	1773061
SEACOR HOLDINGS INC.	3462200
PATRIOT COAL CORPORATION	3623611
FOREST OIL CORP	5282798
COPANO ENERGY, L.L.C.	2013665

ENERPLUS RESOURCES FUND	5087483
DUNCAN ENERGY PARTNERS L.P.	4594724
ENSIGN ENERGY SERVICES INC.	1808076
ALTAGAS INCOME TRUST	1766749
LINN ENERGY, LLC	4722020
PENGROWTH ENERGY TRUST	4342104
ATLAS PIPELINE HOLDINGS, L	2451321
ATLAS PIPELINE PARTNERS, L	2445533
DENBURY RESOURCES INC.	3589674
UNIT CORP	2581866
MARKWEST ENERGY	2673054
RANGE RESOURCES CORP	5562543
ST MARY LAND & EXPLORATION	2695016
MARINER ENERGY, INC.	3392793
DCP MIDSTREAM PARTNERS, LP	1180000
TIDEWATER INC	2751780
WHITING PETROLEUM CORPORAT	4029081
PENN VIRGINIA CORP	2996552
W&T OFFSHORE, INC.	2056186
MAGELLAN MIDSTREAM HOLDING	2600708
MAGELLAN MIDSTREAM PARTNER	2296115
SANDRIDGE ENERGY, INC.	3655058
ARC ENERGY TRUST	3075862
SHAWCOR LIMITED	1003157
ENCORE ACQUISITION CO	3633195
HERCULES OFFSHORE, INC.	2590895
PETROHAWK ENERGY CORPORATI	6907329
MCMORAN EXPLORATION CO	1330282
GLOBAL INDUSTRIES LTD	1485594
INTER PIPELINE FUND	3368992
BRISTOW GROUP INC.	1977355
TETRA TECHNOLOGIES INC	1412624
BASIC ENERGY SERVICES, INC	1310711
CONTINENTAL RESOURCES, INC.	2215879
CABOT OIL & GAS CORPORATION	3701664
CRESCENT POINT ENERGY TRUST	2701035
PRECISION DRILLING TRUST	3947168
RPC INC	793461
NEWPARK RESOURCES INC	713679
CAL DIVE INTERNATIONAL, IN	1309608
ENERFLEX SYSTEMS INCOME FU	605225
TRICAN WELL SERVICE LTD	1006810
PARKER DRILLING CO	1213631
BAYTEX ENERGY TRUST	1479939
SWIFT ENERGY CO	1517288
VERMILION ENERGY TRUST	1468528
BONAVISTA ENERGY TRUST	2076792
BREITBURN ENERGY PARTNERS	2216834
BERRY PETROLEUM CO	2542383
STONE ENERGY CORP	2106003

QUICKSILVER RESOURCES INC	4500571
CNX GAS CORPORATION	2124973
ATLAS ENERGY RESOURCES, LLC	2270685
BOARDWALK PIPELINE PARTNER	6721600
LUFKIN INDUSTRIES INC	530718
MATRIX SERVICE CO	274593
PETROBANK ENERGY AND RESOU	1928554
ION GEOPHYSICAL CORPORATION	861431
ALLIS-CHALMERS ENERGY INC.	1111058
NATCO GROUP INC	508166
WILLIAMS PARTNERS L.P.	1291819
INTEROIL CORPORATION	537815
TRINIDAD DRILLING LTD.	1520549
ATP OIL & GAS CORP	2275610
BILL BARRETT CORPORATION	1995063
PIONEER DRILLING COMPANY	824479
PETROLEUM DEVELOPMENT CORP	1402704
COMSTOCK RESOURCES INC	1577890
MAJOR DRILLING GROUP INTER	422950
ULTRA PETROLEUM CORPORATION	1776200
CLAYTON WILLIAMS ENERGY INC	943409
VENOCO, INC.	864254
FORT CHICAGO ENERGY PARTNE	2554041
TRICO MARINE SERVICES INC	1202576
DRIL-QUIP INC	680609
CONCHO RESOURCES INC.	2815203
EVEREADY INC.	470524
ATWOOD OCEANICS INC	1099958
SUPERIOR WELL SERVICES, IN	658230
ADVANTAGE ENERGY INCOME FU	1882601
CONNACHER OIL AND GAS LIMI	1169096
PHI, INC.	777182
ROSETTA RESOURCES INC.	1154378
GEOKINETICS INC.	439716
TRISTAR OIL & GAS LIMITED	1679602
TESCO CORPORATION	476671
CALFRAC WELL SERVICES LTD.	564896
ARC RESOURCES LTD	1765533
ENERGY PARTNERS LTD	814856
CE FRANKLIN LTD	213485
ICO INC	221096
NAL OIL & GAS TRUST	988565
HORNBECK OFFSHORE SERVICES	1585046
GULF ISLAND FABRICATION INC	350890
COMPTON PETROLEUM CORPORAT	1787182
GULFMARK OFFSHORE INC	1556967
PARAMOUNT ENERGY TRUST	902898
HILAND HOLDINGS GP, LP	435560
HILAND PARTNERS LP	426139
CARBO CERAMICS INC	549279

SAVANNA ENERGY SERVICES CO	847282
TRILOGY ENERGY TRUST	781961
OILEXCO INCORPORATED	1209632